**Project Risks**

**High Risks**

**Scope Creep**

* **Expanding Beyond Initial Objectives**: As the project evolves, there’s a risk that additional features or criteria will be requested, such as including new walkability factors or supporting more user types (e.g., tourists vs. residents). This can lead to project delays and resource overrun, as the team will need to reallocate time and budget to accommodate the new requests.
* **Overcomplicating User Interface**: Trying to include every possible walkability factor might lead to a cluttered or overly complex user interface, which would not only increase development time but also make the tool harder to use. This complexity could turn off users and negatively affect user engagement.
* **Difficulty in Quantifying Subjective Criteria**: Certain walkability factors, like “visual beauty” or “spaces for social interaction,” are subjective and challenging to quantify. Developing reliable metrics for such criteria can be difficult, and inconsistent implementation could reduce the tool’s reliability and user trust.

**2.**

**Technical Feasibility**

* **Complex Algorithm Development**: Developing algorithms that integrate various criteria (e.g., population density, setbacks, greenery, etc.) into a cohesive and computationally efficient model can be a major technical challenge. Balancing accuracy with performance is critical, and inefficient algorithms could lead to performance bottlenecks.

**3**.

**Performance Risks**

* **Performance Problems:** There is a chance that the project, which includes a game with an optional VR mode, may have performance problems. While the non-VR mode could have latency or delayed loading times during dynamic changes, the VR mode demands a significant amount of computing power to provide fluid graphics and interactions. It is important that both modes function properly on every platform.
* **Tool Optimization**: Ensuring the tool runs efficiently, even with heavy data loads like detailed maps or high user activity, can be a challenge. If not optimized, the tool could experience slowdowns or crashes, reducing its usability and appeal to users.

**4**.

**Resource Constraints**

* **Resource Allocation:** Examining every task that must be completed while the project is being developed. The next step is to distribute the right resources—people, equipment, and time—carefully to avoid missing deadlines or overspending and ignoring important details.
* **Time and Budget Overruns**: The complexity of developing a sophisticated tool with multiple integrated features can lead to underestimations of both time and resources required. This could cause project deadlines to be missed and the project to go over budget.
* **Insufficient Testing Time**: If not enough time is allocated for testing and debugging, the tool could be released with flaws or usability issues, leading to a poor user experience. Insufficient testing may also mean that important feedback is missed, requiring costly post-launch fixes.

**5.**

**Team Skill Gaps**

* **Lack of Expertise in Specialized Areas**: Developing a tool that involves urban planning data, GIS integration, and interactive visualization may require specialized skills. If the team lacks expertise in these areas, it may result in delays or poor implementation of key features, potentially jeopardizing the success of the project.

**6**.

**Induced Biases**

* **Data Corruption through Biased Methodology:** The project’s ultimate goal being data collection for social studies on urban design preferences, it is imperative that the collection methodology be as devoid of ideological biases as possible, be they voluntary on unconscious. Induced biases could void the validity of the insights derived from the experiment and should therefore be looked for and identified at every step of the development process.

**Medium Risks:**

**1.**

**User Interaction Risks**

* **Unintuitive User Interface**: If the tool’s interface is not intuitive, users may struggle to input their preferences, leading to frustration and potentially skewed data. Poor UI design can lower user engagement and result in reduced participation or poor-quality feedback.
* **Complexity of User Interaction Scenarios**: Accommodating two distinct scenarios (leisure vs. utilitarian walking) in a simple, user-friendly manner could be challenging. If the tool’s interface doesn’t effectively separate or clarify these scenarios, it could confuse users and result in inaccurate or mixed feedback.
* **Public Engagement:** A diverse sample of the general public must take part in the play sessions for the tool to be effective. There's a chance that the level of public interest won't be as high as expected or that a narrow audience won't find enjoyment in the gaming experience.
* **Quality of Assets:** The project's objective is to enhance an already-existing game (CityPlayer) with a few additional features. Thus, ensuring that consumers are unable to discern any disparity in quality between the assets used in the original game and the ones we will be employing would improve their overall experience with the game and its additional features.

**2.**

**Client Interaction Risks**

* **Feedback Interpretation:** Accurately analyzing client input is crucial for making necessary changes to the process and experience. Misinterpreting or overvaluing specific comments may result in incorrect modifications that detract from the overall usefulness of the instrument.

**3.**

**Third-Party Dependencies**

* **Dependency on External Libraries/Tools**: The project may rely on external tools like mapping APIs or data visualization libraries. If these tools have bugs, compatibility issues, or become obsolete, it could delay development or necessitate additional work to find alternatives.

**4.**

**Testing and User Feedback Risks**

* **Insufficient User Testing**: If the tool is not thoroughly tested with actual users, developers may miss critical feedback about usability or accuracy. This could lead to a tool that technically works but fails to meet user expectations or doesn’t engage the target audience effectively.
* **Feedback Incorporation**: If user feedback is gathered late in development, implementing necessary changes could cause significant delays and require major rework. Incorporating feedback early and throughout development is crucial to avoid last-minute disruptions.

**5.**

**Resource Constraints**

* **Hardware Requirements:** The project’s reliance on large amounts of 3D modeling is a limiting factor for any team member with an average or below average computer. This can be mitigated by using available resources at Concordia or elsewhere, but these solutions also imply additional time constraints.

**Low Risks:**

**1.**

**Team Skill Gaps**

* **Learning Curve**: Developers may need to learn new tools or frameworks during the project, which can temporarily slow down progress. However, this is often manageable with good planning and should only cause minor delays if training is done in the early stages.

**2**.

**Security**

* **User Personal Information:** Users will be asked to enter personal information to adjust collected data according to correlated socio-economic or similar attributes. This should be done as anonymously as possible to protect users from the risk of identity theft.
* **Malicious Use:** Ill-intentioned users could flood the data collection and skew results by massively submitting surveys if the survey is opened to the public. This can be mitigated with a sign-in function.